



NCEP Annual Production Suite Review

7 December 2005

NWS Central Region

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Talking Points

- Feedback on EMC guidance from forecast offices
- CR NWP Team
- NWP in CR
- Discussion items

Feedback

- Very little feedback on EMC guidance
 - Good – everything is fine
 - Bad – tired of complaining
 - Neither – too much going on to provide meaningful feedback (don't want to provide unsubstantiated feedback)
- Don't worry, there is some feedback

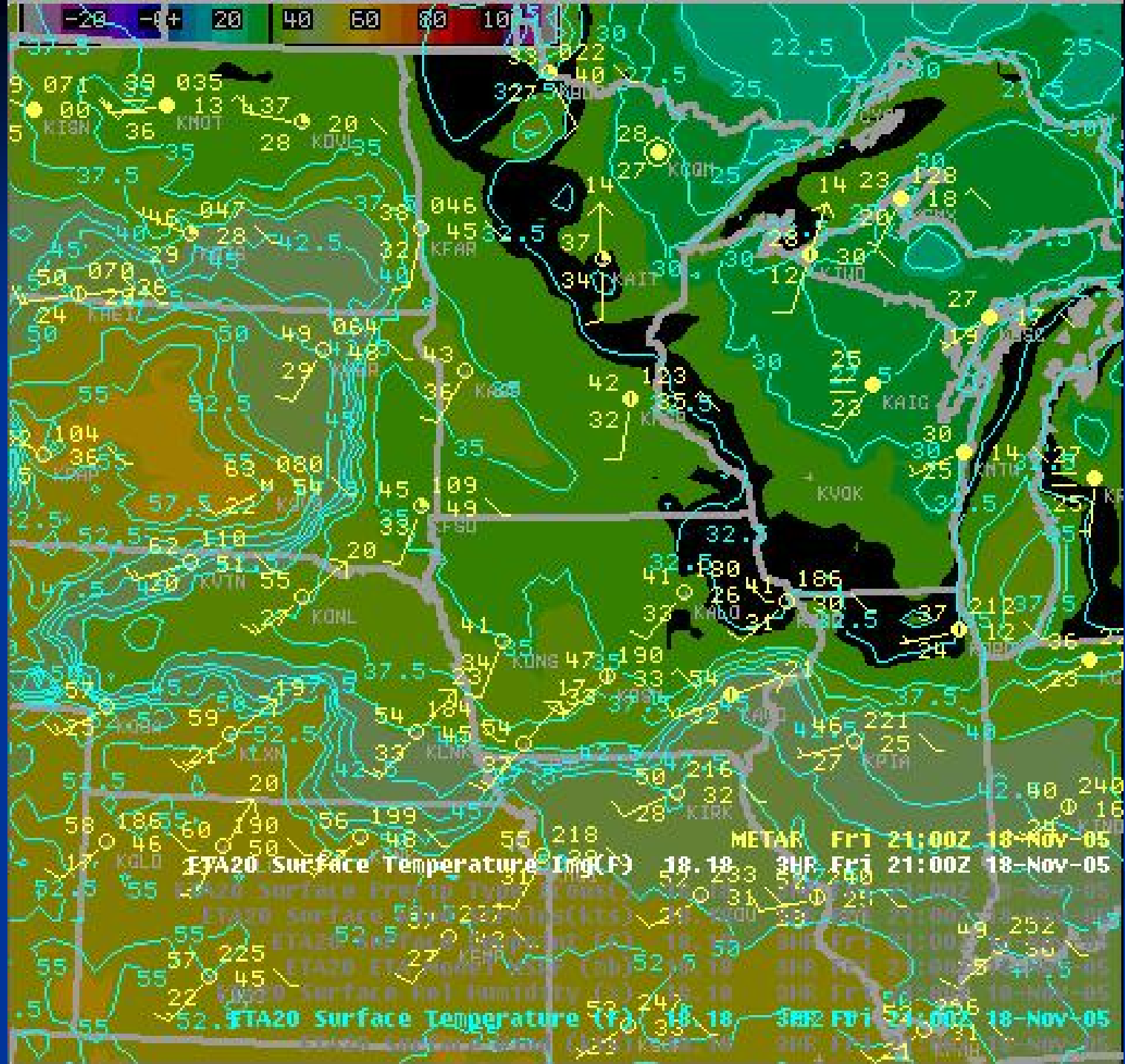
Feedback

■ General theme

- Perceived poor performance of the NAM beyond 24 hours compared to the GFS.
- Desire to see the WRF-NMM with GSI in parallel to see if it would improve things.
- Specifically, the Midwest storm on Nov 5-6 illustrated a bad showing by the NAM.
 - It did not catch on to the significant development of the system until inside of 24 hours.
 - The GFS performed better, although may have been too overzealous initially. It did, however, provide forecasters with more advance notice of a significant event.
 - One office mentioned they would be curious to see a retrospective run of the event from a 12 UTC 4 November start time from the WRF-NMM with GSI.

Feedback

- Continued 2-m temperature cold bias in the NAM associated with snow cover
 - Snow cover “footprint” evident in NAM 2-m temperature output
 - Example of a 15°F error over NE decreasing to a 10°F error over Minnesota, for a three hour forecast
 - RUC 3-hour forecast was within 5°F over the area



Feedback

- “We need to get consistent P-Type algorithm output from NCEP. In other words, the model post-processing needs to run the Ramer, Baldwin, Revised Baldwin, and Bourgoiun at least on the model data. Each type needs to be diagnosed and then shipped for each model in GRIB(2).”
- “This business of certain models sending certain algorithm output isn’t consistent and easy for users.”

Feedback

■ MOS Feedback

- Feeling that forecaster expertise needs to be developed in this area
- Little knowledge of how MOS is developed
- One SOO mentioned hearing common misconceptions about predictors, etc regularly.
- Need more info on the statistical implications that relate directly to single station element development (max/min T, T, Td) and regional development (POPs, PTYPE, etc)
- Ensemble MOS needs to be on the SBN.

Feedback

- Some feedback expressed a desire to see continued low resolution model data sets on AWIPS, namely output on the CONUS211 (80 km) grid.
- The low resolution grids are used in QG diagnostics and as input into other models at certain offices (not clear what types of models)
- Would not necessarily need everything to persist on such low resolution grids, but could provide details of what would be desired.

Feedback

- UKMET and ECMWF (in AWIPS)
 - Could use more fields for both models. Would be nice to have the same resolution of the UKMET all the way out through the model run, rather than dropping out after 72hrs.
- Concern about WRF
 - Reviews of various WRF runs which have been made available have caused some heartburn due to mixed results and some poor performance
 - Desire for evaluation (one SOO felt a year would be needed)

Feedback

■ SREFs

- Not sufficient diversity (reality not represented)
- Concern over use of SREFs by SPC and HPC

■ Suggested cases for review (re-run)

- 15-16 November winter storm (Midwest 12-48+ hours)
- 7-8 November (false) severe event (12-48+ hours)
- 5-6 November winter storm w/severe hail (12-48+ hours)
- Can provide additional details on these events

Feedback

- UKMET (in AWIPS)
 - Return the omega fields for 850, 700, and 500 mb.
 - Were lost 4-5 yrs ago
 - Desire for output every 6 hours from 0-72 hours, then every 12 hours
 - Investigate possibility of having UKMET guidance beyond 72 hours in GRIB (netCDF) other than “redbook” graphics
- ECMWF (in AWIPS)
 - Thermal fields at 925, 700, and 500 mb
 - Out to 192 hours, every 12 hours
 - Thickness fields (1000-700, 1000-850, 850-700)
 - Omega fields at 850, 700, and 500 mb.

Feedback

- “GFS still has a strong bias of being too quick beyond day 4-5; also can be too wet”
- “ECMWF is often a preferred model, so more of the basic surface and upper air fields are needed out to 240 hours.”
- “It is difficult to learn the model biases and adjust for them if the model is constantly being adjusted.”
- “The full RUC13 needs to be inserted into the AWIPS datastream ASAP.”
- “A blend of MAV/MET MOS has been shown to be the most accurate temp/POP forecast out to 48 hours, beating individual MAV, MET or HPC numbers consistently.”
- “It would be useful to have fields from something like a "preferred ensemble cluster" that could be selected on the fly and output to AWIPS and GFE after analysis by the experts at HPC. Now, they say for example, "a blend of X and Y is preferred..." It would be nice to see and use such "output".”

Feedback

- Very happy with output from (dev)RUC13, particularly at Great Lakes offices
 - 48 hour output helps with lead-times for gale/storm events (and, one hurricane force wind event in November)
 - Typically provides the “high end” of the guidance envelope for winds, but has shown utility over the Great Lakes in such high impact events when NAM & GFS (regardless of which model level is evaluated) did not.

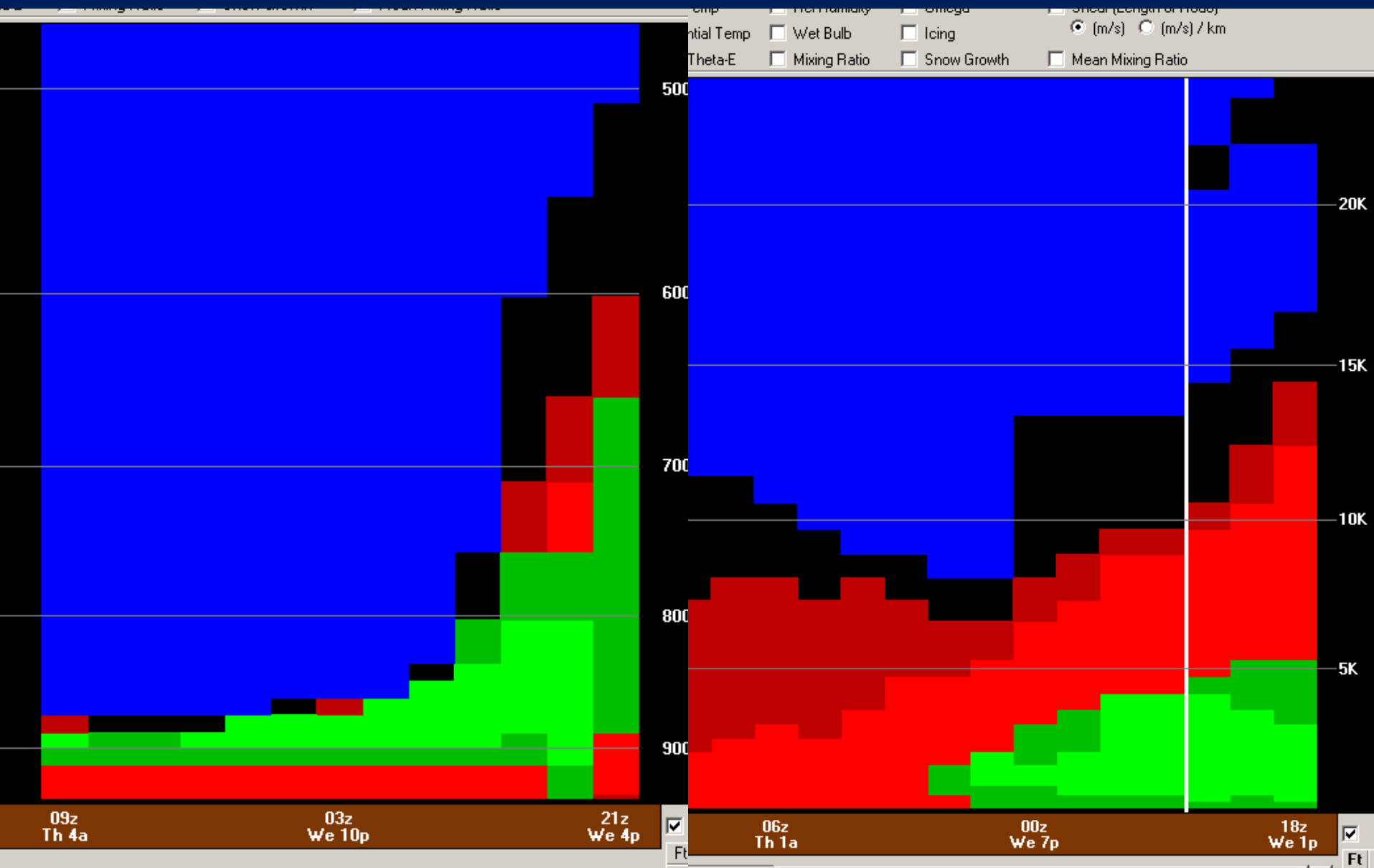
Feedback

- A great deal of apprehension concerning the switch to the WRF-NMM in Spring, since it will occur at the start of the severe weather season over much of the area
- A definite desire to have parallel runs to evaluate through at least June or July in order to evaluate differences and adjust to them

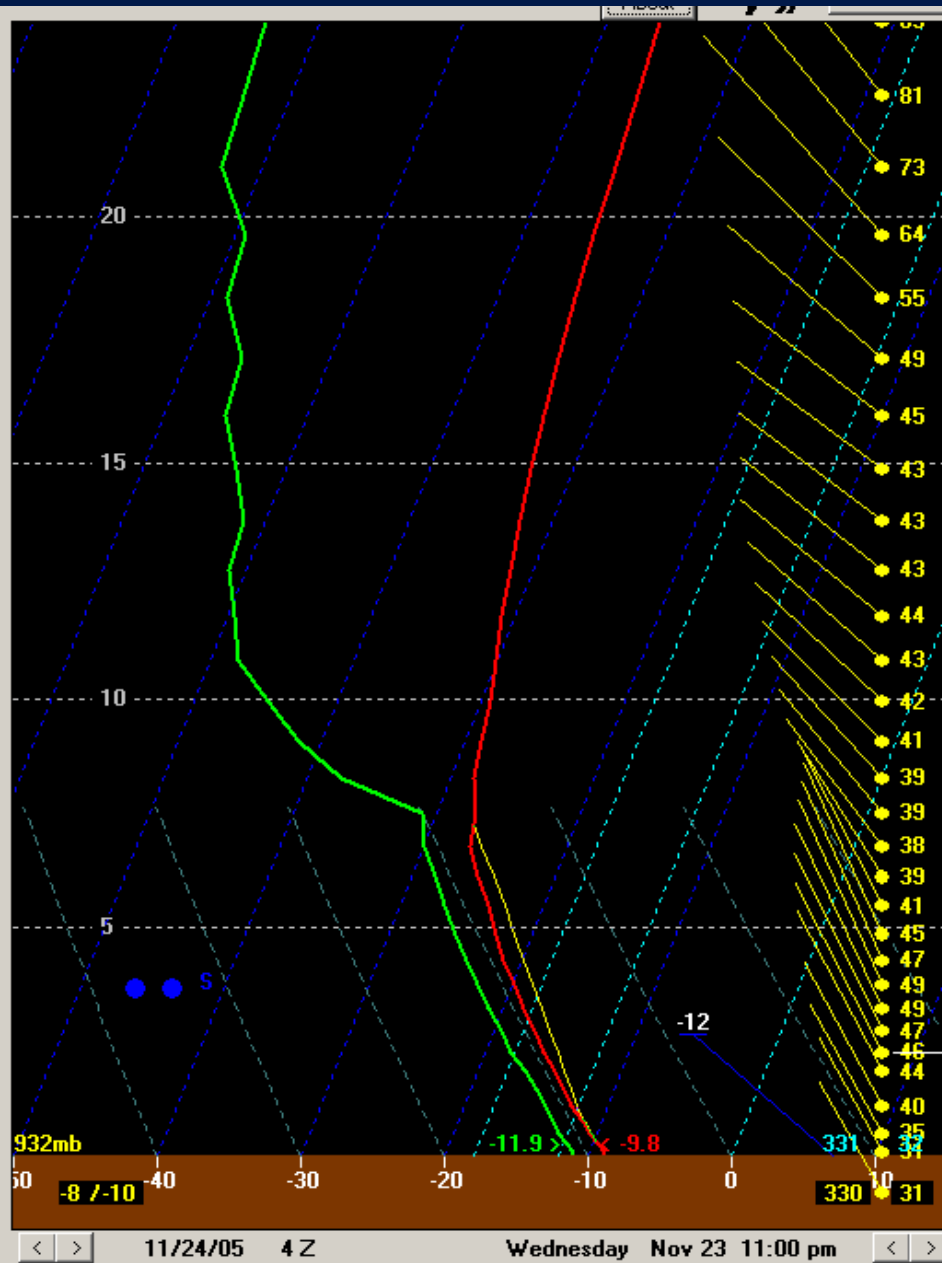
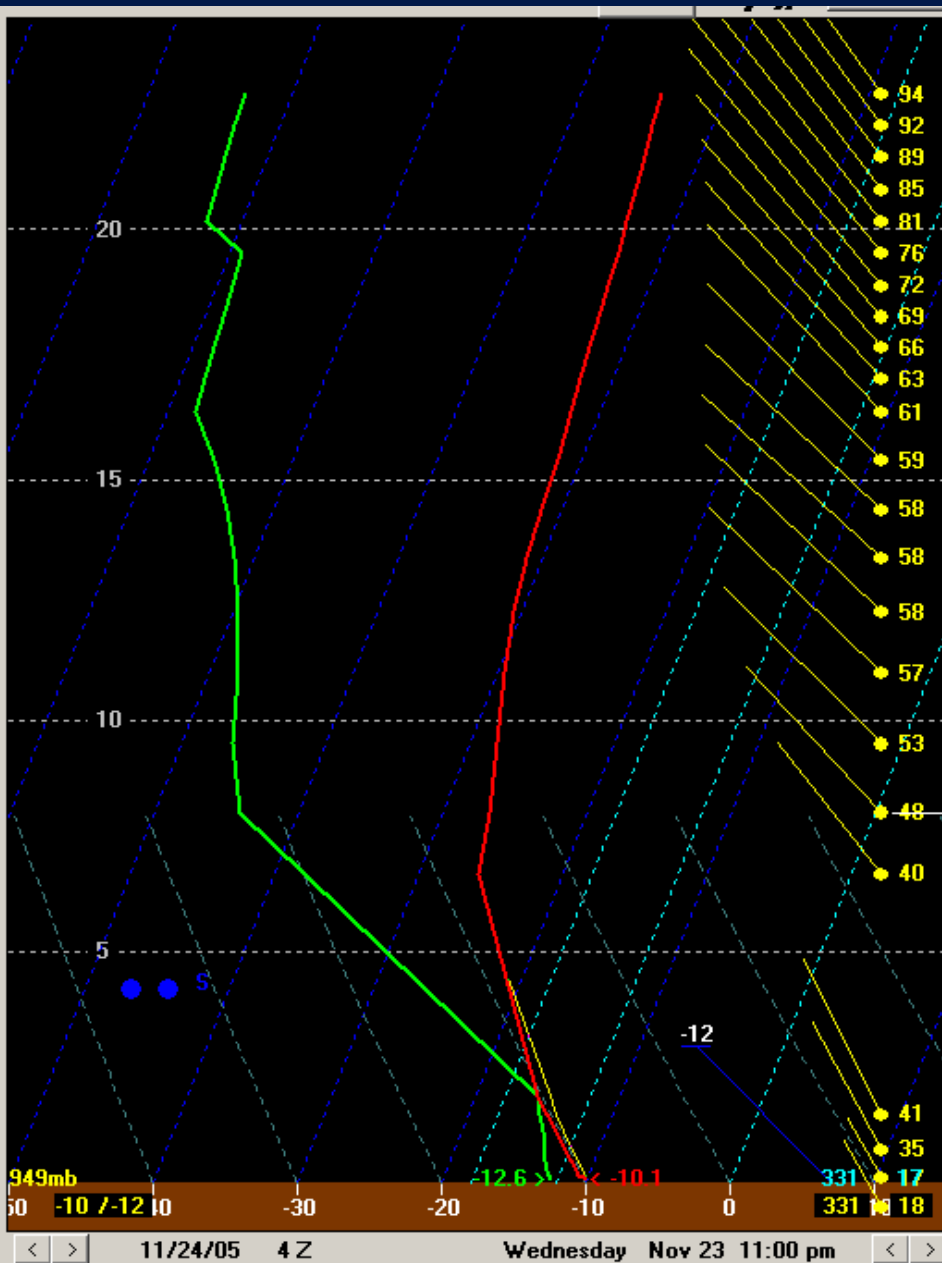
Feedback

- Interesting RUC item
 - Unexpected sounding profile in very unstable lake effect regime
 - Appeared to possibly be related to isentropic vertical coordinate since “odd” sounding evident when there was a lack of vertical layers (near constant theta)
 - Likely more going on, including the possibility of problems with visualization tool (BUFKIT)

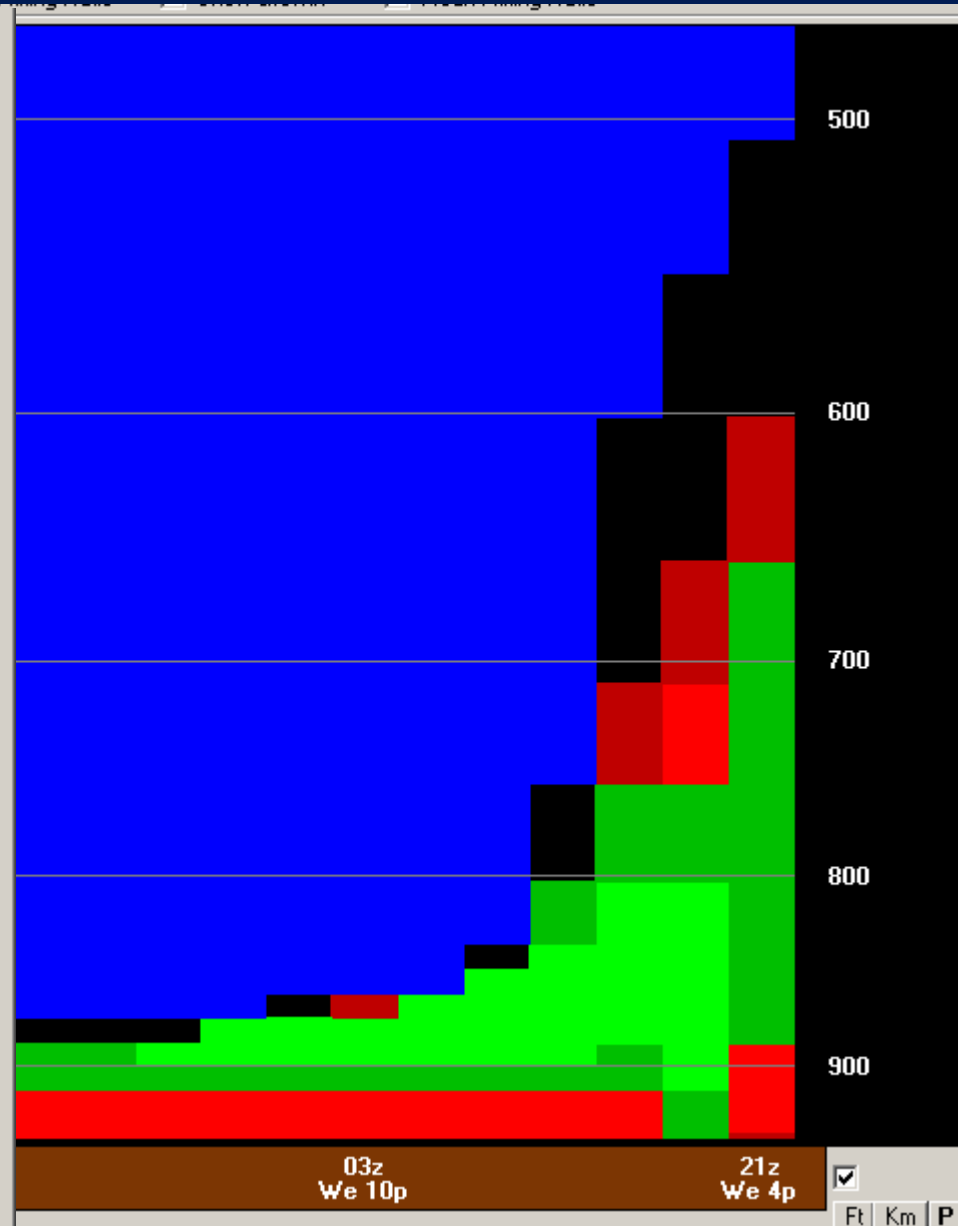
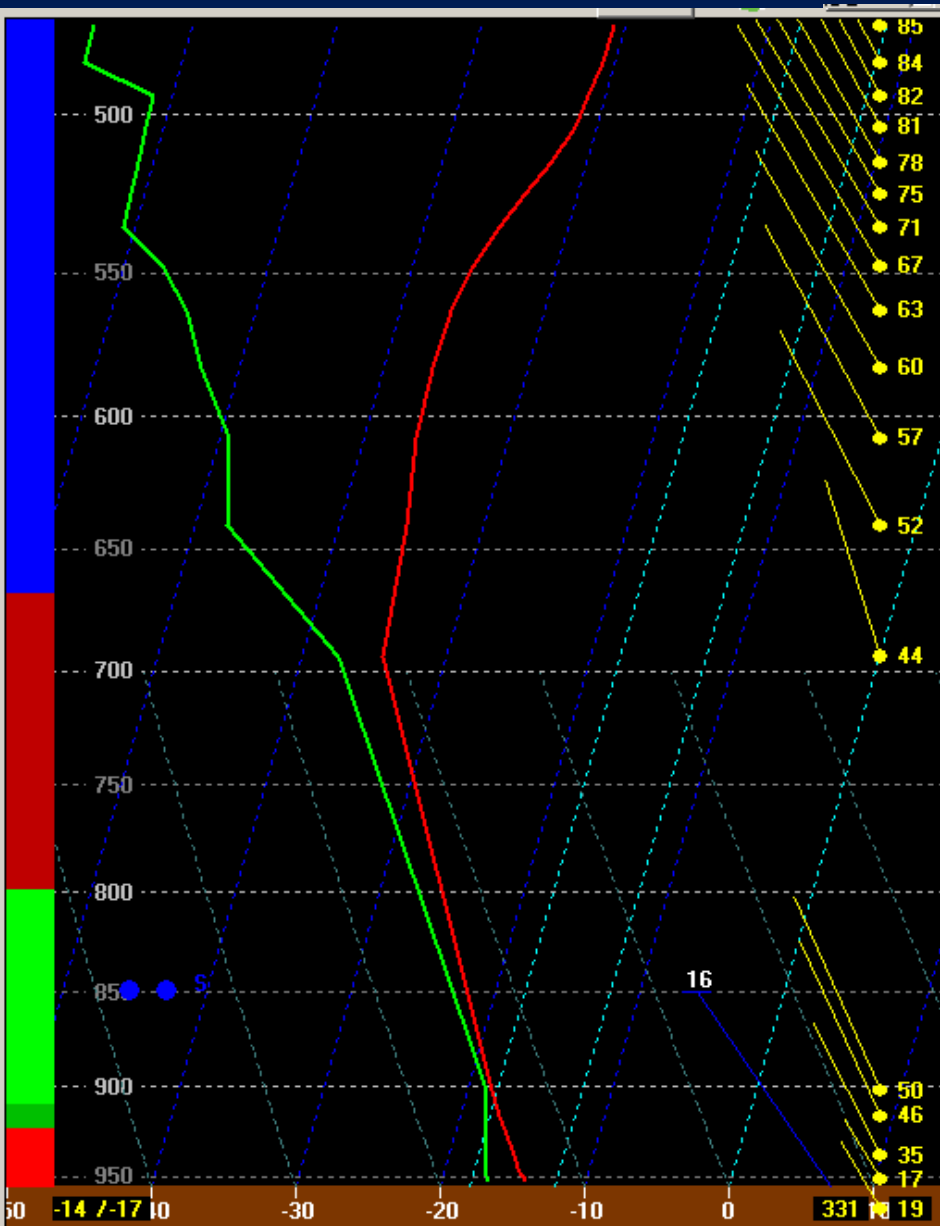
RUC vs. NAM



RUC vs. NAM



Inconsistent Signal & Software Issue

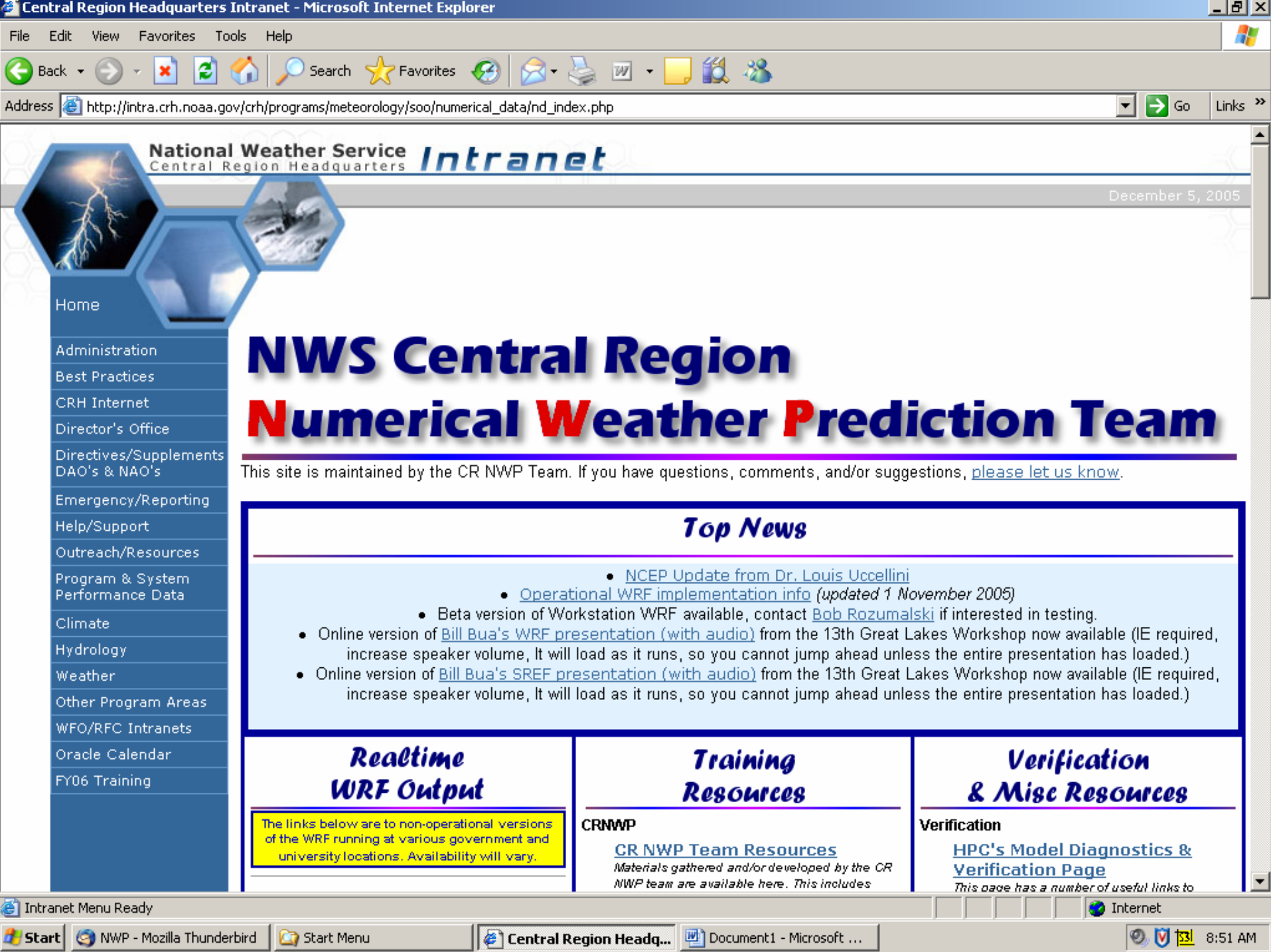


Central Region NWP Team

- Serve as a source of NWP-related information for SOOs within the region
 - Keep up with latest information
 - Pass along training materials
 - Develop training materials
 - Conduct surveys, monitor NWP usage within the region
 - Provide guidance on local modeling
 - Etc...

Central Region NWP Team

- NWP web page developed for CR Intranet
- Training materials (such as Bill Bua's talks from the U.S./Canada Great Lakes Operational Meteorology Workshop) made available
- Developing survey to assess use of local models within CR
- Considering developing a local NWP capability at CRH to address "regional" issues



Home

Administration

Best Practices

CRH Internet

Director's Office

Directives/Supplements
DAO's & NAO's

Emergency/Reporting

Help/Support

Outreach/Resources

Program & System
Performance Data

Climate

Hydrology

Weather

Other Program Areas

WFO/RFC Intranets

Oracle Calendar

FY06 Training

NWS Central Region Numerical Weather Prediction Team

This site is maintained by the CR NWP Team. If you have questions, comments, and/or suggestions, [please let us know](#).

Top News

- [NCEP Update from Dr. Louis Uccellini](#)
- [Operational WRF implementation info](#) (updated 1 November 2005)
- Beta version of Workstation WRF available, contact [Bob Rozumalski](#) if interested in testing.
- Online version of [Bill Bua's WRF presentation \(with audio\)](#) from the 13th Great Lakes Workshop now available (IE required, increase speaker volume, It will load as it runs, so you cannot jump ahead unless the entire presentation has loaded.)
- Online version of [Bill Bua's SREF presentation \(with audio\)](#) from the 13th Great Lakes Workshop now available (IE required, increase speaker volume, It will load as it runs, so you cannot jump ahead unless the entire presentation has loaded.)

Realtime WRF Output

The links below are to non-operational versions of the WRF running at various government and university locations. Availability will vary.

Training Resources

CRNWP

[CR NWP Team Resources](#)

Materials gathered and/or developed by the CR NWP team are available here. This includes

Verification & Misc Resources

Verification

[HPC's Model Diagnostics & Verification Page](#)

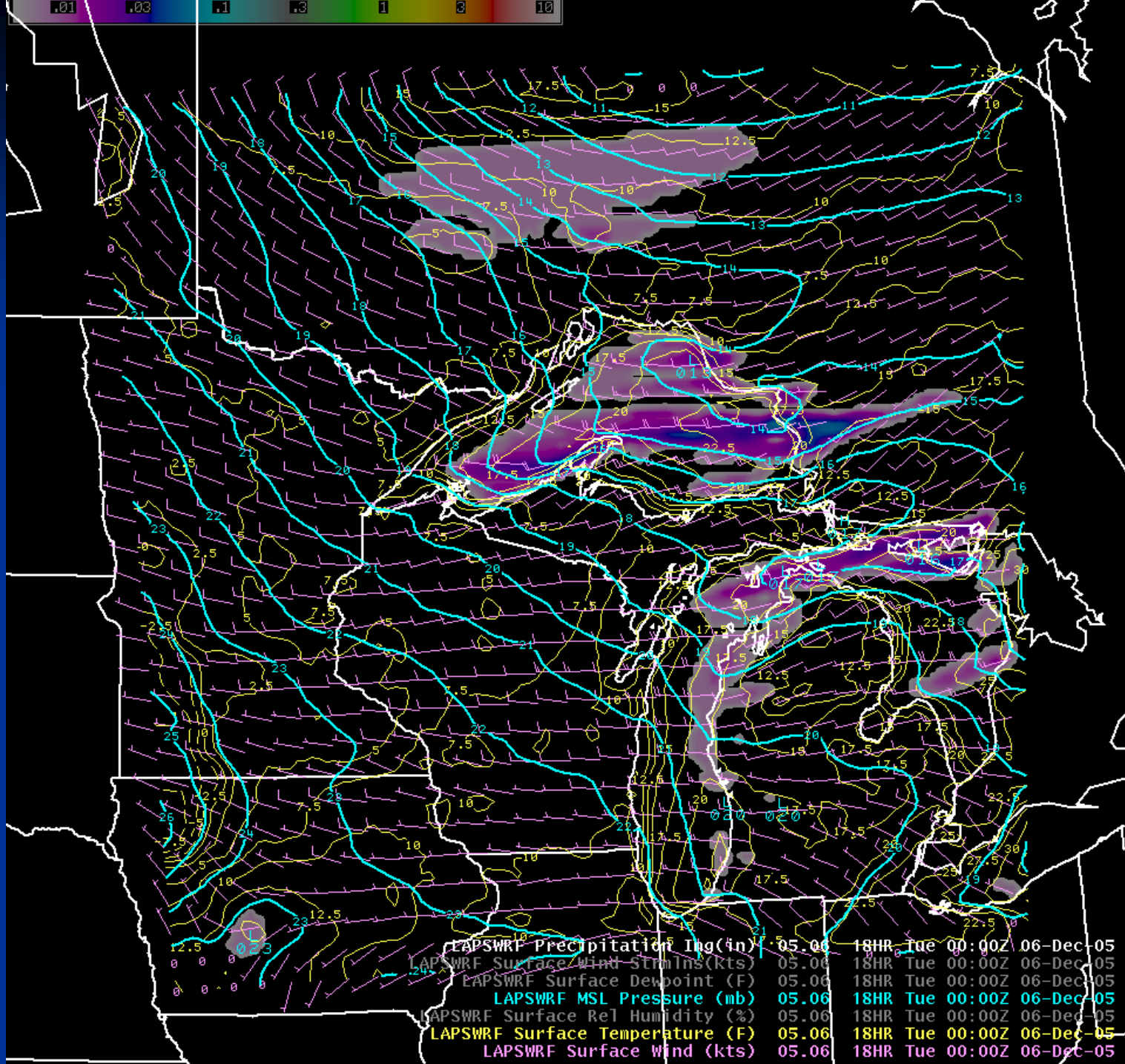
This page has a number of useful links to

NWP in Central Region

- Local models (WS Eta primarily) being run at numerous CR offices
- Generally used to downscale NWP guidance, running at high resolution on small domains (using NAM initial/boundary conditions)
- Varying degrees of familiarity/expertise
- WRF beginning to be run at more offices with arrival of COMET's workstation version, although a few offices have been running WRF for a year or two

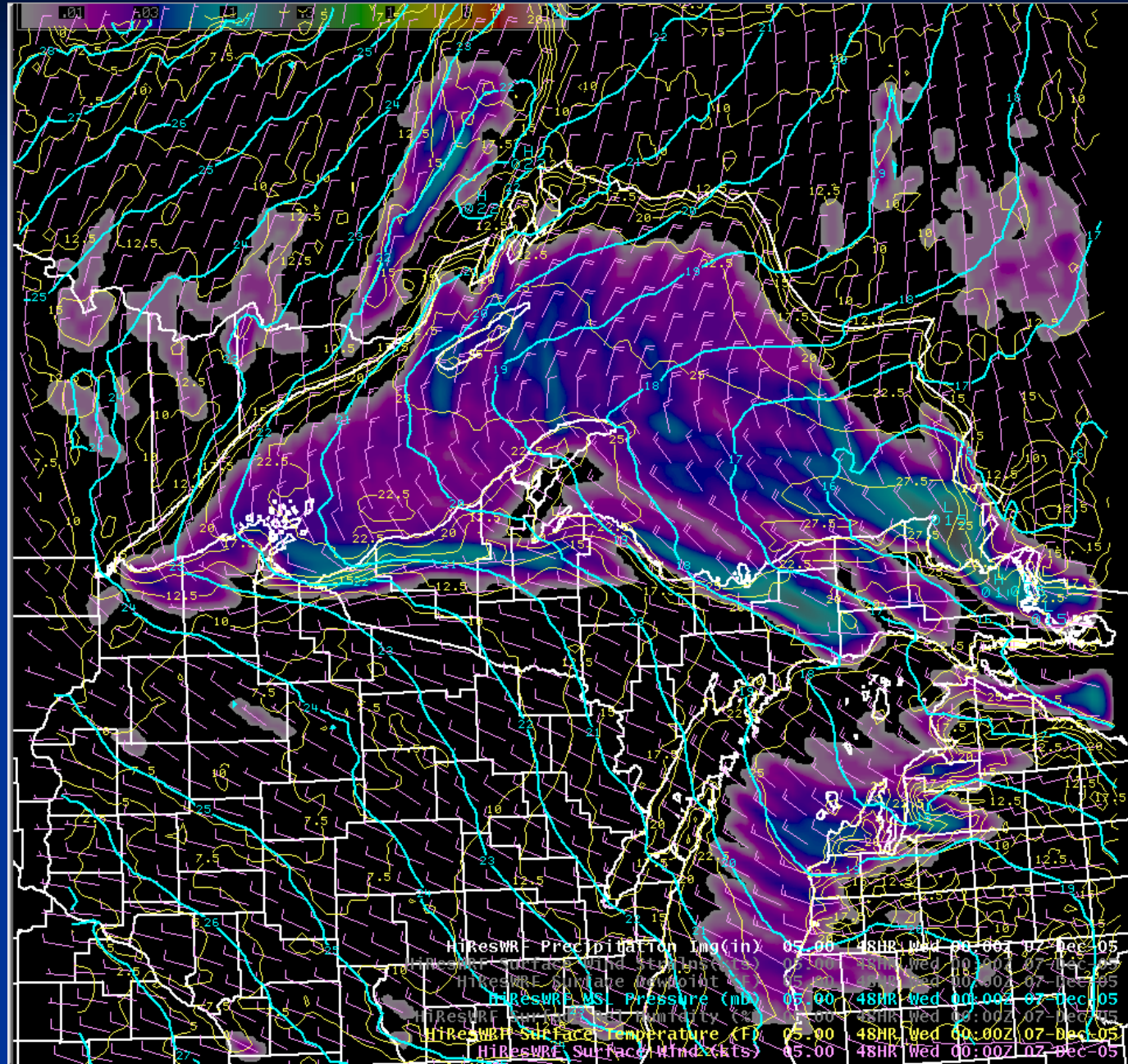
Some Local NWP Examples

- LAPS/WRF-ARW run in Marquette, MI
 - Cycled LAPS/WRF-ARW
 - Runs hourly with output to 2-hours (from WRF-ARW) and 18-hour output every three hours
 - Runs at HH+35 with 18-hour forecasts available at HH+1:45
 - 10 km grid spacing
 - Data “stolen” from AWIPS with additional data from GDS MADIS feed
 - Uses GOES satellite data from AWIPS, AWIPS radar data (archive III), and additional “standard” AWIPS data
 - Diabatic initialization (LAPS hotstart)
 - Available in AWIPS and via web page (accessible within NWS)
 - Favorable response thus far (appears to provide useful mesoscale information for short range forecasts, beyond what is currently have available via SBN)



High Resolution Local NWP

- Typically a downscaling tool
- Used most where fixed mesoscale forcing is present (Great Lakes, complex terrain)



Low Resolution Local NWP

NWS Detroit/Pontiac -- Local Model Output - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Reload Home Search Favorites RSS Mail Print Word PDF Links

Address http://www.crh.noaa.gov/dtx/wrfhemidisplay.php Go Links

Submit a Report
Current Conditions
Observations
Satellite Images
Rivers & Lakes AHPS
Precip Estimate
Radars Imagery
Local Radar
Nationwide
Forecasts
Local Area
Aviation
Marine
Fire Weather
Graphical
Weather Planner
Rivers / Hydrology
AHPS / River Info
Flash Floods
Climate
Past Weather
Records
Prediction
Local Climate
Severe Weather
Local Outlooks & Reviews
Weather Safety
StormReady
Weather Radio
EMWIN
Skywarn
Outreach Events
Local Information
Our Office
Coop Observer
Office History

Init Time = 0000 UTC - 12/05/2005 - Complete through 180 hours

MSLP/2m T & Td Forecast Hour 0

Step Controls: Start Prev Next End Animation Controls: Rev Stop Fwd Decr Incr Print

Dataset: wrfheml RIP: overview Init: 0000 UTC Mon 05 Dec 05
Fcst: 0.00 Valid: 0000 UTC Mon 05 Dec 05 (1900 EST Sun 04 Dec 05)
Temperature at k-index = 24 sm= 6
Temperature at k-index = 24 sm= 6
Dewpoint temperature at k-index = 24 sm= 6
Dewpoint temperature at k-index = 24 sm= 6
Dewpoint temperature at k-index = 24 sm= 6
Sea-level

CONTOURS: UNITS: hPa LOW= 980.00 HIGH= 1040.00 INTERVAL= 2.000
CONTOURS: UNITS: hPa LOW= 980.00 HIGH= 1040.00 INTERVAL= 2.000

Done Document1 - Microsoft Word Internet

Start Start Menu NWS Detroit/Pontiac ... Document1 - Microsoft ... 9:04 AM

Interesting New Local NWP Work

- Detroit/White Lake, MI
 - Working with user-based ensemble system
 - North American domain running at 80km grid spacing
 - Four members
 - Forecasters adjust initial conditions (300 mb height anomalies) using GFE software
 - Perturbed initial conditions drive four WRF-ARW ensemble members with output posted into AWIPS
 - Runs on-demand with output posted within about 90 minutes

A Few Discussion Items

- We have heard a great deal about SREFs
 - Utilization at WFOs is still minimal
 - New training modules may help
 - Availability in AWIPS should help
 - Inherent issue with thought process regarding how to use information within deterministic gridded forecast framework
- Field struggles with if/how to use “off hour” runs, particularly the GFS since the “extended” grids are not updated more than once or twice per day. Methodology can vary from office to office, making it difficult to maintain a “well collaborated” forecast.

A Few Discussion Items

■ Verification

- Desire to see statistics which focus on significant events. Statistics can look good overall, but performance during significant events is what is typically most important.
- NDFD verification needs to match the forecast methodology of how grids are generated at forecast offices.

■ DGEX

- Field struggles with using DGEX since it frequently does not mimic GFS solution.
- Are there other ways DGEX could be structured to better downscale the GFS?

A Few Discussion Items

■ Model Evaluation

- Need a better way to review/evaluate parallel runs.
- Ideally, data needs to be in AWIPS.
- FX-Net may be an option, but bandwidth issues persist.
- Reduced datasets could help with evaluation in AWIPS.
 - Dev RUC13 from GSD fits within bandwidth constraints, since it includes only a subset of fields (forecasters can view additional fields online if/when desired)

Questions?